Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

On the possibility of aeolian dunes on a laboratory scale[1]
MATTHIAS SPERL, Duke University, Physics Dept., R.P. BEHRINGER — Recent progress in modeling aeolian sand dunes in the field has resulted in the prediction of a critical linear length scale below which no shape stable dune can form. Under typical field conditions on earth, this length scale is around 10m or larger. Using small (0.05mm) lightweight (0.2g/cc) particles with a proper surface treatment to reduce cohesion we can demonstrate how the dune problem can be scaled down to a lab-size wind tunnel. We demonstrate (a) different transport properties of the particles upon variation of the wind speed, (b) the growth of a heap, (c) the formation of a crest, and (d) ripples on a smaller scale than the heap.

[1]This work is supported by NSF-DMT0137119, DMS0244492, and DFG SP 714/3-1.

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Date submitted: 15 Nov 2006 Electronic form version 1.4